

## CLAIMS

What is claimed is:

1. A sensor for a vehicle seat belt retractor comprising:
  - a housing;
  - an excitation mass that is displaceable relative to the housing in response to inertial forces acting on the vehicle;
  - a locking mechanism which locks the belt retractor upon displacement of the mass;
  - a lever arm connected to the housing at a pivot point, the lever arm being in contact with the inertia body, the lever arm engaging the locking mechanism when the excitation mass moves relative to the housing; and
  - a damper that restricts vertical displacement of the excitation mass relative to the housing to prevent undesired retractor locking.
2. The sensor of claim 1 wherein the excitation mass is a spherical mass.
3. The sensor of claim 2 wherein the housing is provided with an indentation in which the excitation mass resides.
4. The sensor of claim 3 wherein the indentation has an inclined surface, movement of the excitation mass relative to the housing being a movement over the inclined surface.

5. The sensor of claim 1 wherein the lever arm is provided with a hole through which the damper extends.
6. The sensor of claim 1 wherein the excitation mass is a non-spherical mass that pivots about a point in on the housing.
7. The sensor of claim 6 wherein the excitation mass moves the lever arm away from the pivot point as the excitation pivots about the pivot point.
8. The sensor of claim 1 wherein a gap exists between the lever arm and the locking mechanism when the excitation mass is undisturbed.
9. The sensor of claim 8 wherein movement of the excitation mass closes the gap.
10. The sensor of claim 8 wherein movement of the excitation mass relative to the housing defines a no lock zone when the gap is greater than zero, the locking mechanism being unlocked when the excitation mass occupies the no lock zone.
11. The sensor of claim 8 wherein the movement of the excitation mass relative to the housing defines a lock zone when the gap is about zero, the locking mechanism being locked when the excitation mass occupies the lock zone.
12. The sensor of claim 1 further comprising one or more additional dampers.

13. The sensor of claim 12 wherein an additional damper provides opposing magnetic fields.
14. The sensor of claim 12 wherein an additional damper includes a spring.